

1 **Method For Dual Damascene Patterning With Single Exposure Using Tri-Tone Phase**
2 **Shift Mask**

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Abstract

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A reticle structure and a method of forming a photoresist profile on a substrate using the reticle having a multi-level profile. The reticle comprises (1) a transparent substrate, (2) a partially transmitting 180 degree phase shift film overlying predetermined areas of the transparent substrate to transmit approximately 20 to 70% of incident light, and (3) an opaque film overlying the predetermined areas of the partially transmitting 180 degree phase shift film. The method comprises the following steps: a) depositing a photoresist film over the substrate; b) directing light to the photoresist film through the reticle, and c) developing the photoresist film to form an opening in the resist layer where light only passed thru the substrate, and to remove intermediate thickness of the photoresist film, in the areas where the light passed through the partially transmitting 180 degree phase shift film. In an aspect, the photoresist film is comprised of a lower photoresist layer and an upper photoresist layer. The lower photoresist layer is less sensitive to light than the upper photoresist layer. In an aspect, the resist profile is used to form a dual damascene shaped opening.